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lundin mining

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Tuesday, May 20, 2014

Via PDF (Moody.jonathan@EPA.gov)
Confirmation First Class Mail

U.S. Environmental Protection Agency
Attention: Jonathan Moody
Water Enforcement & Compliance Assurance Branch
Water Division, WC-15J
77 West Jackson Blvd.
Chicago, IL 60604-3590

RE: April 2014 Monthly Discharge Report Pursuant to Paragraph 10 of July 2, 2013 Clean Water Act Section 308(a) Request for Information
Eagle Mine, LLC, Humboldt Mill Facility
Docket No. V-W-13-308-17

Dear Mr. Moody:

In accordance with Region 5 U.S. EPA's Clean Water Act Section 308(a) Information Request dated July 2, 2013 (Request) and subsequent correspondence between Regional Counsel Nicole Cantello and Dennis J. Donohue, Eagle Mine LLC (Eagle) hereby submits this monthly report of discharge of water from the Humboldt Tailings Disposal Facility (HTDF) in partial response to paragraph No. 10 of the Request, for the period from April 1 to April 30, 2014.

The enclosed tabular summary (Table 1) contains dates of water discharge from the HTDF, the total estimated volume of discharge and the peak rate of discharge. Because flow rates are measured or estimated on a daily basis, the peak rate of discharge is presented as a daily maximum flow.

Analytical results from April 25, 2014 and April 28, 2014 sampling of the HTDF discharge are also summarized in Table 1. The April 25, 2014 sampling event represents a wet weather sampling event and the event on April 28, 2014 represents a dry weather event. The laboratory analytical reports for the HTDF discharge samples, including relevant chain of custody documentation, are presented as Attachment I to this letter.

The HTDF discharge analytical results were compared to Michigan Rule 57 water quality standards and no exceedances of Rule 57 water quality standards were observed in the surface water discharge samples.

Finally, we are also submitting surface water elevation data for the HTDF collected in April of 2014, as requested by Nicole Cantello in her September 3, 2013 electronic correspondence to Dennis Donohue.

Please do not hesitate to contact me with any questions regarding these documents or if you are in need of additional information.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person(s) who manage the system, or those person(s) directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Kristen A. Mariuzza
Manager, Environment & Permitting

HUMBOLDT TAILINGS DISPOSAL FACILITY
STORM WATER DISCHARGE
FLOW DATA

Discharge Date	Estimated Daily Discharge (gal) [1]	Notes
4/1/2014	1,099,513	
4/2/2014	1,099,513	
4/3/2014	1,698,050	
4/4/2014	2,506,050	
4/5/2014	2,561,123	
4/6/2014	2,561,123	
4/7/2014	2,129,123	
4/8/2014	1,961,123	
4/9/2014	329,123	
4/10/2014	329,123	
4/11/2014	0	
4/12/2014	0	
4/13/2014	0	
4/14/2014	0	
4/15/2014	0	
4/16/2014	186,000	
4/17/2014	576,000	
4/18/2014	576,000	
4/19/2014	576,000	
4/20/2014	576,000	
4/21/2014	576,000	
4/22/2014	576,000	
4/23/2014	396,000	
4/24/2014	360,000	
4/25/2014	1,152,000	
4/26/2014	1,152,000	
4/27/2014	1,152,000	
4/28/2014	1,152,000	
4/29/2014	1,152,000	
4/30/2014	1,152,000	
Total Estimated Monthly Discharge (gal):	27,583,863	
Maximum Estimated Daily Discharge Rate (gal):	2,561,123	

[1] Discharge rates are estimated based, in part, on pump capacity and pump operating time.

HUMBOLDT TAILINGS DISPOSAL FACILITY
STORM WATER DISCHARGE
DISCHARGE CHARACTERIZATION DATA

Sample Location		EM-HMP-009	EM-HMP-009
Lab Sample ID		T14D414	T14D430
Sampled By		AECOM	AECOM
Analyzed By		Trace	Trace
Sample Date		4/25/2014	4/28/2014
Inorganics	***Units***		
Antimony	*ug/L*	<1.0	<1.0
Arsenic	*ug/L*	**1.7**	**1.7**
Barium	*ug/L*	**50**	**51.0**
Beryllium	*ug/L*	<1.0	<1.0
Boron	*ug/L*	**71**	**67**
Cadmium	*ug/L*	<0.20	<0.20
Chromium, Total	*ug/L*	<10	<10
Cobalt	*ug/L*	**17**	**17**
Copper	*ug/L*	**8.8**	**8.4**
Lead	*ug/L*	<1.0	<1.0
Lithium	*ug/L*	<10	<10
Manganese	*ug/L*	**1100**	**1300**
Mercury (Inorganic)	*ng/L*	<0.50	<0.50
Molybdenum	*ug/L*	**55**	**53**
Nickel	*ug/L*	**81**	**75**
Selenium	*ug/L*	**2.1**	**2.1**
Silver	*ug/L*	<0.50	<0.50
Strontium	*ug/L*	**230**	**210**
Thallium	*ug/L*	<1.0	<1.0
Zinc	*ug/L*	<10	<10
Miscellaneous	***Units***		
Cyanide, total	*mg/L*	<0.0050	<0.0050
Fluoride	*mg/L*	**1.4**	**0.25**
Nitrogen, Ammonia	*mg/L*	<0.010	<0.010
Phosphorus, Total	*mg/L*	<0.010	<0.010
Sulfate	*mg/L*	**140**	**140**
Total Dissolved Solids (TDS)	*mg/L*	**330**	**300**
Total Suspended Solids (TSS)	*mg/L*	<10	<10

Bolded value denotes parameter detected above detection limit

HUMBOLDT TAILINGS DISPOSAL FACILITY ("HTDF")
SURFACE WATER ELEVATION DATA

Measurement Date	HTDF Water Elevation (ft AMSL)
4/2/2014	1532.97
4/8/2014	1532.72
4/16/2014	1533.11
4/21/2014	1533.25
4/23/2014	1533.29
4/30/2014	1533.42

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May 06, 2014

Mr. Lance Lindberg
AECOM
1050 Wilson
Marquette, MI 49855

Phone: (906) 228-2333
Fax: (906) 226-8371

RE: Trace Project T14D414
Client Project Humbolt Mill 60305471

Dear Mr. Lindberg:

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

For clients that require NELAC Accreditation, Trace certifies that these test results meet all requirements of the NELAC Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAC at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at jmink@trace-labs.com.

Sincerely,

Jon Mink
Senior Project Manager
Enclosures

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SAMPLE SUMMARY

Trace Project ID: T14D414
Client Project ID: Humbolt Mill 60305471

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
T14D414-01	EM-HMP-009	Aqueous	ll	04/25/14 09:15	04/26/14 10:35

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AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the compound has not been evaluated by NELAC
NA	Indicates that the compound is not available.

NOTE: Samples for volatiles that have been extracted with a water miscible solvent were corrected for the total volume of the solvent/water mixture.

DATA QUALIFIERS

Trace ID: T044758-BS1

Analysis: EPA 200.8 Rev. 5.4

Beryllium	Note 112 : The LCS recovery was out of control high. Because there were no positive results for this analyte in this QC batch, no data require qualification.

Trace ID: T14D414-01

Analysis: SM 4500-H+ B-00

pH	Note 511 : The sample was received and, therefore, analyzed beyond the established EPA hold time. The result must be considered estimated.
pH	Note pH : The pH was analyzed at 10:51

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ANALYTICAL RESULTS

Trace Project ID: T14D414
Client Project ID: Humbolt Mill 60305471

Trace ID: T14D414-01 Date Collected: 04/25/14 09:15 Matrix: Aqueous
Sample ID: EM-HMP-009 Date Received: 04/26/14 10:35

PARAMETERS	RESULTS	UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL										
Analysis Method: EPA 1631E										
Batch: T044840										
Mercury	<0.50	ng/L	0.50	1	05/02/14	rw	05/03/14	rw		
Analysis Method: EPA 200.7 Rev. 4.4										
Batch: T044758										
Boron	**71**	**ug/L**	**20**	**1**	**04/29/14**	**kj**	**04/30/14**	**dtm**		
Lithium	<10	ug/L	10	1	04/29/14	kj	04/30/14	dtm	N	
Strontium	**230**	**ug/L**	**50**	**1**	**04/29/14**	**kj**	**04/30/14**	**dtm**		
Analysis Method: EPA 200.8 Rev. 5.4										
Batch: T044758										
Antimony	<1.0	ug/L	1.0	5	04/29/14	kj	05/06/14	rw		
Arsenic	**1.7**	**ug/L**	**1.0**	**1**	**04/29/14**	**kj**	**05/02/14**	**rw**		
Barium	**50**	**ug/L**	**5.0**	**1**	**04/29/14**	**kj**	**05/02/14**	**rw**		
Beryllium	<1.0	ug/L	1.0	1	04/29/14	kj	05/02/14	rw		
Cadmium	<0.20	ug/L	0.20	1	04/29/14	kj	05/02/14	rw		
Chromium	<10	ug/L	10	1	04/29/14	kj	05/02/14	rw		
Cobalt	**17**	**ug/L**	**2.0**	**1**	**04/29/14**	**kj**	**05/02/14**	**rw**		
Copper	**8.8**	**ug/L**	**1.0**	**1**	**04/29/14**	**kj**	**05/02/14**	**rw**		
Lead	<1.0	ug/L	1.0	1	04/29/14	kj	05/02/14	rw		
Manganese	**1100**	**ug/L**	**10**	**50**	**04/29/14**	**kj**	**05/02/14**	**rw**		
Molybdenum	**55**	**ug/L**	**1.0**	**1**	**04/29/14**	**kj**	**05/02/14**	**rw**	N	
Nickel	**81**	**ug/L**	**5.0**	**1**	**04/29/14**	**kj**	**05/02/14**	**rw**		
Selenium	**2.1**	**ug/L**	**1.0**	**1**	**04/29/14**	**kj**	**05/02/14**	**rw**		
Silver	<0.50	ug/L	0.50	1	04/29/14	kj	05/02/14	rw		
Thallium	<1.0	ug/L	1.0	1	04/29/14	kj	05/02/14	rw		
Zinc	<10	ug/L	10	1	04/29/14	kj	05/02/14	rw		

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ANALYTICAL RESULTS

Trace Project ID: T14D414
Client Project ID: Humbolt Mill 60305471

Trace ID: T14D414-01 Date Collected: 04/25/14 09:15 Matrix: Aqueous
Sample ID: EM-HMP-009 Date Received: 04/26/14 10:35

PARAMETERS	RESULTS	UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
WET CHEMISTRY										
Analysis Method: ASTM D7511-09e2										
Batch: T044737										
Cyanide (total)	<0.0050	mg/L	0.0050	1	04/29/14	sv	04/29/14	sv		
Analysis Method: EPA 300.0 Rev. 2.1										
Batch: T044745										
Fluoride	**1.4**	**mg/L**	**0.10**	**5**	**04/29/14**	**sv**	**04/29/14**	**rbp**		
Sulfate as SO4	**140**	**mg/L**	**5.0**	**10**	**04/29/14**	**sv**	**04/29/14**	**rbp**		
Analysis Method: EPA 350.1 Rev. 2.0										
Batch: T044806										
Ammonia as N	<0.010	mg/L	0.010	1	05/01/14	as	05/01/14	as		
Analysis Method: SM 2540 C-97										
Batch: T044730										
Total Dissolved Solids	**330**	**mg/L**	**10**	**1**	**04/28/14**	**sv**	**04/28/14**	**sv**		
Analysis Method: SM 2540 D-97										
Batch: T044733										
Total Suspended Solids	<10	mg/L	10	1	04/28/14	eb	04/28/14	sv		
Analysis Method: SM 4500-H+ B-00										
Batch: T044786										
pH	**7.63**	**pH Units**		**1**	**04/25/14**	**jrw**	**04/28/14**	**jrw**	511, pH	
Analysis Method: SM 4500-O C-01										
Batch: T044736										
Dissolved Oxygen	**11**	**mg/L**	**0.080**	**1**	**04/28/14**	**sv**	**04/28/14**	**sv**	N	
Analysis Method: SM 4500-P E										
Batch: T044749										
Phosphorus-Total (as P)	<0.010	mg/L	0.010	1	04/29/14	rbp	04/29/14	rbp	N	

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QUALITY CONTROL RESULTS

Trace Project ID: T14D414
Client Project ID: Humbolt Mill 60305471

QC Batch: T044840
QC Batch Method: EPA 1631E
Analysis Description: Mercury, Total, Low Level
Analysis Method: EPA 1631E

METHOD BLANK: T044840-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.50	0.50	

LABORATORY CONTROL SAMPLE: T044840-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Mercury	ng/L	25.0	24.8	99	77-123	

Trace Project ID: T14D414
Client Project ID: Humbolt Mill 60305471

QC Batch: T044758
QC Batch Method: EPA 200.2
Analysis Description: Strontium, Total
Analysis Method: EPA 200.7 Rev. 4.4

METHOD BLANK: T044758-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	ug/L	<40	40	
Lithium	ug/L	<10	10	
Strontium	ug/L	<50	50	

LABORATORY CONTROL SAMPLE: T044758-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	ug/L	1600	1460	91	85-115	
Lithium	ug/L	1600	1400	88	85-115	
Strontium	ug/L	1600	1410	88	85-115	

Trace Project ID: T14D414
Client Project ID: Humbolt Mill 60305471

QC Batch: T044758
QC Batch Method: EPA 200.2
Analysis Description: Cadmium, Total
Analysis Method: EPA 200.8 Rev. 5.4

METHOD BLANK: T044758-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	ug/L	<0.50	0.50	
Arsenic	ug/L	<1.0	1.0	

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METHOD BLANK: T044758-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Barium	ug/L	<5.0	5.0	
Beryllium	ug/L	<1.0	1.0	
Cadmium	ug/L	<0.20	0.20	
Cobalt	ug/L	<2.0	2.0	
Chromium	ug/L	<10	10	
Copper	ug/L	<1.0	1.0	
Manganese	ug/L	<1.0	1.0	
Molybdenum	ug/L	<1.0	1.0	
Nickel	ug/L	<5.0	5.0	
Lead	ug/L	<0.40	0.40	
Antimony	ug/L	<1.0	1.0	
Selenium	ug/L	<1.0	1.0	
Thallium	ug/L	<1.0	1.0	
Zinc	ug/L	<4.0	4.0	

LABORATORY CONTROL SAMPLE: T044758-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Silver	ug/L	50.0	56.7	113	85-115	
Arsenic	ug/L	100	103	103	85-115	
Barium	ug/L	1600	1580	99	85-115	
Beryllium	**ug/L**	**200**	**237**	**118**	**85-115**	**112**
Cadmium	ug/L	50.0	51.6	103	85-115	
Cobalt	ug/L	1600	1700	106	85-115	
Chromium	ug/L	50.0	52.7	105	85-115	
Copper	ug/L	1600	1640	102	85-115	
Manganese	ug/L	1600	1670	105	85-115	
Molybdenum	ug/L	1600	1520	95	85-115	
Nickel	ug/L	1600	1680	105	85-115	
Lead	ug/L	100	97.2	97	85-115	
Antimony	ug/L	100	115	115	85-115	
Selenium	ug/L	100	107	107	85-115	
Thallium	ug/L	100	92.5	93	85-115	
Zinc	ug/L	1600	1630	102	85-115	

Trace Project ID: T14D414
Client Project ID: Humbolt Mill 60305471

QC Batch: T044737
QC Batch Method: ASTM D7511-09e2

Analysis Description: Cyanide, Total
Analysis Method: ASTM D7511-09e2

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METHOD BLANK: T044737-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Cyanide (total)	mg/L	<0.0050	0.0050	

LABORATORY CONTROL SAMPLE: T044737-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Cyanide (total)	mg/L	0.100	0.104	104	90-110	

Trace Project ID: T14D414
Client Project ID: Humbolt Mill 60305471

QC Batch: T044745
QC Batch Method: IC Prep W
Analysis Description: Sulfate
Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T044745-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Fluoride	mg/L	<0.10	0.10	
Sulfate as SO4	mg/L	<2.5	2.5	

LABORATORY CONTROL SAMPLE: T044745-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Fluoride	mg/L	0.500	0.484	97	90-110	
Sulfate as SO4	mg/L	2.50	2.53	101	90-110	

Trace Project ID: T14D414
Client Project ID: Humbolt Mill 60305471

QC Batch: T044806
QC Batch Method: EPA 350.1 Rev. 2.0
Analysis Description: Nitrogen, Ammonia
Analysis Method: EPA 350.1 Rev. 2.0

METHOD BLANK: T044806-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Ammonia as N	mg/L	<0.010	0.010	

LABORATORY CONTROL SAMPLE: T044806-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Ammonia as N	mg/L	0.500	0.521	104	90-110	

Trace Project ID: T14D414
Client Project ID: Humbolt Mill 60305471

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QC Batch: T044730
QC Batch Method: SM 2540 C-97

Analysis Description: Total Dissolved Solids
Analysis Method: SM 2540 C-97

METHOD BLANK: T044730-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Dissolved Solids	mg/L	<10	10	

LABORATORY CONTROL SAMPLE: T044730-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Dissolved Solids	mg/L	500	520	104	80-120	

Trace Project ID: T14D414
Client Project ID: Humbolt Mill 60305471

QC Batch: T044733
QC Batch Method: SM 2540 D-97

Analysis Description: Total Suspended Solids
Analysis Method: SM 2540 D-97

METHOD BLANK: T044733-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Suspended Solids	mg/L	<10	10	

LABORATORY CONTROL SAMPLE: T044733-BS4

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Suspended Solids	mg/L	50.0	51.0	102	85-115	

Trace Project ID: T14D414
Client Project ID: Humbolt Mill 60305471

QC Batch: T044786
QC Batch Method: *** DEFAULT PREP ***

Analysis Description: pH, SM 4500
Analysis Method: SM 4500-H+ B-00

Trace Project ID: T14D414
Client Project ID: Humbolt Mill 60305471

QC Batch: T044736
QC Batch Method: SM 4500-O C-01

Analysis Description: Dissolved Oxygen
Analysis Method: SM 4500-O C-01

Trace Project ID: T14D414
Client Project ID: Humbolt Mill 60305471

QC Batch: T044749
QC Batch Method: SM 4500-P E

Analysis Description: Total Phosphorus
Analysis Method: SM 4500-P E

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METHOD BLANK: T044749-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Phosphorus-Total (as P)	mg/L	<0.010	0.010	

LABORATORY CONTROL SAMPLE: T044749-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Phosphorus-Total (as P)	mg/L	0.100	0.0991	99	85-116	

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CHAIN-OF-CUSTODY RECORD

Page 1 of 1

TRACE ID NO. T14D414

TRACE USE ONLY

Logged By: JW   Checked By: [signature]

Received on ice: (Yes) No   Preservative Checked: (Yes) No N/A

Soil Volatiles Preserved: MeOH Low Level Lab Sampling Time:

Report Results To:

Client Name: AECOM

Contact Person: LANCE LINDBERG

Mailing Address: 1050 WILSON ST

City, State, Zip Code: MARQUETTE, MI 49855

Phone: 906-226-4980   Fax: 906-226-8371

Email Address: lance.lindberg@aecom.com

Cell #: 906-869-0619   Sampled by: [signature]

Project Name & #: HUMBOLDT MILL 60305471

Regulatory Requirements		Turnaround Requirements		Matrix Key	
MERA TMDL's	☐	Standard	☒	S = Soil	WI = Wipes
Drinking Water	☐	3-4 Day (RUSH)*	☐	W = Water	LW = Liquid Waste
NPDES	☐	24-48 Hour (RUSH)*	☐	SE = Sediment	A = Air
USACE	☐	* Requires prior approval		OI = Oil	D = Drinking Water
Special	☐			SO = Solid Waste	SL = Sludge

Bill To:

Billing Address (if different) ____

City, State, Zip Code ____

Attn: ____ Phone: ____ PO #: ____

Request for Analytical Services

ANALYSIS REQUESTED

TRACE NO.	DATE TAKEN	TIME TAKEN	METALS FIELD FILTERED	CLIENT SAMPLE ID	MATRIX	NUMBER OF CONTAINERS	Total Sb, As, Ba, Be	B, Cd, Ca, Cr, Co	Pb, Li, Mn, Mo, Ni, Se, Ag, Sr, Tl, Zn	TOTAL CYANIDE	TOTAL LL Hg	TOTAL SULFATE	TDS	TOTAL PHOSPHOROUS	TSS	Ammonia Nitrogen as N	DO/pH	REMARKS	Possible Health Hazard
1	4/25/14	9:15	N	EM-HMP-009	W	6	X	X	X	X	X	X	X	X	X	X			

Please Sign

Item #	RELEASED BY	RECEIVED BY	DATE	TIME	Item #	RELEASED BY	RECEIVED BY	DATE	TIME
1)	[signature]	UPS	4/25/13	5:00PM	3)				
2)	UPS	[signature]	4/28/14	10:35	4)				

In executing this Chain of Custody, the client acknowledges acceptance of the terms and conditions of the agreement as set forth at http://www.trace-labs.com/cocterms.php

CERTIFICATE OF ANALYSIS

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SAMPLE LOG IN CHECKLIST

Trace ID #: T1D414 Date: 4/28/14 Package Description: Cooler

Client Name: AECOM Time: 10:35 Logged in by: JW

Cooler Receipt

Cooler/samples delivered by: Trace courier [ ]
Hand delivered [ ] Name of delivery person: _____
Commercial courier [X] UPS [X] FED EX [ ] US Mail [ ]

Tracking Number: [ ] Not Applicable
Tracking #: 1ZRA1 034 44 9154 8538

COC Seals present and intact on cooler? No [ ] Yes [ ] [X] Not Applicable

Custody seals signed by Client? No [ ] Yes [ ] Client custody seal # (if applicable): _____

Coolant and Temperature

Type of Coolant Used

Slurry w/ crushed, cubed, or chip ice? [X]
Multiple bags of ice around samples? [ ]
Ice Packs/ Blue Ice : [ ]
No Coolant Present: [ ]

Cooler Temperature

Correction Factor: IR Thermometer 0.2 °C
Digital Stick Thermometer 0.1 °C
Temperature Blank: 3.0 °C (Use Digital Stick Thermometer)
Range of 3 samples: 0.6-2.4 °C (Use IR Thermometer)
Melt Water: 0 °C (IR or Stick Therm. - circle one)
Ice still present upon receipt: [X] Yes [ ] No

General

	Yes	No	NA	Comments
All bottles arrived unbroken with labels in good condition?	X			
Each sample point is in a sealed plastic bag?		X		
Labels filled out completely?	X			
All bottle labels agree with Chain of Custody (COC)?	X			
Sufficient sample to run tests requested?	X			
pH checked and samples at correct pH?	X			See Below*
Correct preservative added to samples?			X	
Air bubbles absent from VOAs?			X	
COC filled out properly and signed by client?	X			
COC signed in by TRACE sample custodian?	X			
Was project manager called and samples discussed?				

Notes:

*EMD pH Test Strips Used:

[X] pH 0-2.5 Lot: I HC390427
[X] pH 11.0-13.0 Lot: HC949254
[ ] Other: _____

Form 70-A.10
Effective 8/26/13

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May 07, 2014

Mr. Lance Lindberg
AECOM
1050 Wilson
Marquette, MI 49855

Phone: (906) 228-2333
Fax: (906) 226-8371

RE: Trace Project T14D430
Client Project Humbolt Mill 60305471

Dear Mr. Lindberg:

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

For clients that require NELAC Accreditation, Trace certifies that these test results meet all requirements of the NELAC Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAC at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at jmink@trace-labs.com.

Sincerely,

Jon Mink
Senior Project Manager
Enclosures

ACCREDITED IN ACCORDANCE WITH nelac
NJDEP Accreditation No. MI008 PADEP Accreditation No. 68-04471

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SAMPLE SUMMARY

Trace Project ID: T14D430
Client Project ID: Humbolt Mill 60305471

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
T14D430-01	EM-HMP-009	Aqueous	ll	04/28/14 11:45	04/29/14 08:55

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AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the compound has not been evaluated by NELAC
NA	Indicates that the compound is not available.

NOTE: Samples for volatiles that have been extracted with a water miscible solvent were corrected for the total volume of the solvent/water mixture.

DATA QUALIFIERS

Trace ID: T044758-BS1

Analysis: EPA 200.8 Rev. 5.4

Beryllium	Note 112 : The LCS recovery was out of control high. Because there were no positive results for this analyte in this QC batch, no data require qualification.

Trace ID: T14D430-01

Analysis: SM 4500-H+ B-00

pH	Note pH : The pH was analyzed at 09:08

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ANALYTICAL RESULTS

Trace Project ID: T14D430
Client Project ID: Humbolt Mill 60305471

Trace ID: T14D430-01 Date Collected: 04/28/14 11:45 Matrix: Aqueous
Sample ID: EM-HMP-009 Date Received: 04/29/14 08:55

PARAMETERS	RESULTS	UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
METALS, TOTAL										
Analysis Method: EPA 1631E										
Batch: T044885										
Mercury	<0.50	ng/L	0.50	1	05/05/14	rw	05/05/14	rw		
Analysis Method: EPA 200.7 Rev. 4.4										
Batch: T044758										
Boron	**67**	**ug/L**	**20**	**1**	**04/29/14**	**kj**	**04/30/14**	**dtm**		
Lithium	<10	ug/L	10	1	04/29/14	kj	04/30/14	dtm	N	
Strontium	**220**	**ug/L**	**50**	**1**	**04/29/14**	**kj**	**04/30/14**	**dtm**		
Analysis Method: EPA 200.8 Rev. 5.4										
Batch: T044758										
Antimony	<1.0	ug/L	1.0	5	04/29/14	kj	05/06/14	rw		
Arsenic	**1.7**	**ug/L**	**1.0**	**1**	**04/29/14**	**kj**	**05/02/14**	**rw**		
Barium	**51**	**ug/L**	**5.0**	**1**	**04/29/14**	**kj**	**05/02/14**	**rw**		
Beryllium	<1.0	ug/L	1.0	1	04/29/14	kj	05/02/14	rw		
Cadmium	<0.20	ug/L	0.20	1	04/29/14	kj	05/02/14	rw		
Chromium	<10	ug/L	10	1	04/29/14	kj	05/02/14	rw		
Cobalt	**17**	**ug/L**	**2.0**	**1**	**04/29/14**	**kj**	**05/02/14**	**rw**		
Copper	**8.4**	**ug/L**	**1.0**	**1**	**04/29/14**	**kj**	**05/02/14**	**rw**		
Lead	<1.0	ug/L	1.0	1	04/29/14	kj	05/02/14	rw		
Manganese	**1300**	**ug/L**	**10**	**50**	**04/29/14**	**kj**	**05/02/14**	**rw**		
Molybdenum	**53**	**ug/L**	**1.0**	**1**	**04/29/14**	**kj**	**05/02/14**	**rw**	N	
Nickel	**75**	**ug/L**	**5.0**	**1**	**04/29/14**	**kj**	**05/02/14**	**rw**		
Selenium	**2.1**	**ug/L**	**1.0**	**1**	**04/29/14**	**kj**	**05/02/14**	**rw**		
Silver	<0.50	ug/L	0.50	1	04/29/14	kj	05/02/14	rw		
Thallium	<1.0	ug/L	1.0	1	04/29/14	kj	05/02/14	rw		
Zinc	<10	ug/L	10	1	04/29/14	kj	05/02/14	rw		

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ANALYTICAL RESULTS

Trace Project ID: T14D430
Client Project ID: Humbolt Mill 60305471

Trace ID: T14D430-01 Date Collected: 04/28/14 11:45 Matrix: Aqueous
Sample ID: EM-HMP-009 Date Received: 04/29/14 08:55

PARAMETERS	RESULTS	UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
WET CHEMISTRY										
Analysis Method: ASTM D7511-09e2										
Batch: T044919										
Cyanide (total)	<0.0050	mg/L	0.0050	1	05/06/14	sv	05/06/14	sv		
Analysis Method: EPA 300.0 Rev. 2.1										
Batch: T044914										
Fluoride	**0.25**	**mg/L**	**0.10**	**5**	**05/06/14**	**sv**	**05/06/14**	**sv**		
Sulfate as SO4	**140**	**mg/L**	**5.0**	**10**	**05/06/14**	**sv**	**05/06/14**	**sv**		
Analysis Method: EPA 350.1 Rev. 2.0										
Batch: T044805										
Ammonia as N	<0.010	mg/L	0.010	1	05/01/14	as	05/01/14	as		
Analysis Method: SM 2540 C-97										
Batch: T044816										
Total Dissolved Solids	**300**	**mg/L**	**10**	**1**	**05/01/14**	**eb**	**05/01/14**	**eb**		
Analysis Method: SM 2540 D-97										
Batch: T044766										
Total Suspended Solids	<10	mg/L	10	1	04/29/14	eb	04/30/14	eb		
Analysis Method: SM 4500-H+ B-00										
Batch: T044786										
pH	**7.54**	**pH Units**		**1**	**04/28/14**	**jrw**	**04/29/14**	**jrw**	pH	
Analysis Method: SM 4500-O C-01										
Batch: T044757										
Dissolved Oxygen	**10**	**mg/L**	**0.080**	**1**	**04/29/14**	**sv**	**04/29/14**	**sv**	N	
Analysis Method: SM 4500-P E										
Batch: T044749										
Phosphorus-Total (as P)	<0.010	mg/L	0.010	1	04/29/14	rbp	04/29/14	rbp	N	

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QUALITY CONTROL RESULTS

Trace Project ID: T14D430

Client Project ID: Humbolt Mill 60305471

QC Batch: T044885
QC Batch Method: EPA 1631E

Analysis Description: Mercury, Total, Low Level
Analysis Method: EPA 1631E

METHOD BLANK: T044885-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.50	0.50	

LABORATORY CONTROL SAMPLE: T044885-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Mercury	ng/L	25.0	24.2	97	77-123	

Trace Project ID: T14D430

Client Project ID: Humbolt Mill 60305471

QC Batch: T044758
QC Batch Method: EPA 200.2

Analysis Description: Strontium, Total
Analysis Method: EPA 200.7 Rev. 4.4

METHOD BLANK: T044758-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	ug/L	<40	40	
Lithium	ug/L	<10	10	
Strontium	ug/L	<50	50	

LABORATORY CONTROL SAMPLE: T044758-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	ug/L	1600	1460	91	85-115	
Lithium	ug/L	1600	1400	88	85-115	
Strontium	ug/L	1600	1410	88	85-115	

Trace Project ID: T14D430

Client Project ID: Humbolt Mill 60305471

QC Batch: T044758
QC Batch Method: EPA 200.2

Analysis Description: Cadmium, Total
Analysis Method: EPA 200.8 Rev. 5.4

METHOD BLANK: T044758-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	ug/L	<0.50	0.50	
Arsenic	ug/L	<1.0	1.0	

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METHOD BLANK: T044758-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Barium	ug/L	<5.0	5.0	
Beryllium	ug/L	<1.0	1.0	
Cadmium	ug/L	<0.20	0.20	
Cobalt	ug/L	<2.0	2.0	
Chromium	ug/L	<10	10	
Copper	ug/L	<1.0	1.0	
Manganese	ug/L	<1.0	1.0	
Molybdenum	ug/L	<1.0	1.0	
Nickel	ug/L	<5.0	5.0	
Lead	ug/L	<0.40	0.40	
Antimony	ug/L	<1.0	1.0	
Selenium	ug/L	<1.0	1.0	
Thallium	ug/L	<1.0	1.0	
Zinc	ug/L	<4.0	4.0	

LABORATORY CONTROL SAMPLE: T044758-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Silver	ug/L	50.0	56.7	113	85-115	
Arsenic	ug/L	100	103	103	85-115	
Barium	ug/L	1600	1580	99	85-115	
Beryllium	**ug/L**	**200**	**237**	**118**	**85-115**	**112**
Cadmium	ug/L	50.0	51.6	103	85-115	
Cobalt	ug/L	1600	1700	106	85-115	
Chromium	ug/L	50.0	52.7	105	85-115	
Copper	ug/L	1600	1640	102	85-115	
Manganese	ug/L	1600	1670	105	85-115	
Molybdenum	ug/L	1600	1520	95	85-115	
Nickel	ug/L	1600	1680	105	85-115	
Lead	ug/L	100	97.2	97	85-115	
Antimony	ug/L	100	115	115	85-115	
Selenium	ug/L	100	107	107	85-115	
Thallium	ug/L	100	92.5	93	85-115	
Zinc	ug/L	1600	1630	102	85-115	

Trace Project ID: T14D430
Client Project ID: Humbolt Mill 60305471

QC Batch: T044919
QC Batch Method: ASTM D7511-09e2

Analysis Description: Cyanide, Total
Analysis Method: ASTM D7511-09e2

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METHOD BLANK: T044919-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Cyanide (total)	mg/L	<0.0050	0.0050	

LABORATORY CONTROL SAMPLE: T044919-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Cyanide (total)	mg/L	0.100	0.0994	99	90-110	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T044919-MSD1 Original: **T14D430-01**

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Cyanide (total)	mg/L	0	0.100	0.106	0.108	106	108	81-114	2	20	

Trace Project ID: T14D430
Client Project ID: Humbolt Mill 60305471

QC Batch: T044914
QC Batch Method: IC Prep W
Analysis Description: Sulfate
Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T044914-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Fluoride	mg/L	<0.10	0.10	
Sulfate as SO4	mg/L	<2.5	2.5	

LABORATORY CONTROL SAMPLE: T044914-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Fluoride	mg/L	0.500	0.457	91	90-110	
Sulfate as SO4	mg/L	2.50	2.41	96	90-110	

Trace Project ID: T14D430
Client Project ID: Humbolt Mill 60305471

QC Batch: T044805
QC Batch Method: EPA 350.1 Rev. 2.0
Analysis Description: Nitrogen, Ammonia
Analysis Method: EPA 350.1 Rev. 2.0

METHOD BLANK: T044805-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Ammonia as N	mg/L	<0.010	0.010	

LABORATORY CONTROL SAMPLE: T044805-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes

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LABORATORY CONTROL SAMPLE: T044805-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Ammonia as N	mg/L	0.500	0.521	104	90-110	

Trace Project ID: T14D430
Client Project ID: Humbolt Mill 60305471

QC Batch: T044816
QC Batch Method: SM 2540 C-97
Analysis Description: Total Dissolved Solids
Analysis Method: SM 2540 C-97

METHOD BLANK: T044816-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Dissolved Solids	mg/L	<10	10	

LABORATORY CONTROL SAMPLE: T044816-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Dissolved Solids	mg/L	500	520	104	80-120	

SAMPLE DUPLICATE: T044816-DUP1 Original: **T14D430-01**

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Notes
Total Dissolved Solids	mg/L	302	328	8	10	

Trace Project ID: T14D430
Client Project ID: Humbolt Mill 60305471

QC Batch: T044766
QC Batch Method: SM 2540 D-97
Analysis Description: Total Suspended Solids
Analysis Method: SM 2540 D-97

METHOD BLANK: T044766-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Suspended Solids	mg/L	<10	10	

LABORATORY CONTROL SAMPLE: T044766-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Suspended Solids	mg/L	50.0	57.0	114	85-115	

Trace Project ID: T14D430
Client Project ID: Humbolt Mill 60305471

QC Batch: T044786
QC Batch Method: *** DEFAULT PREP ***
Analysis Description: pH, SM 4500
Analysis Method: SM 4500-H+ B-00

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Trace Project ID: T14D430
Client Project ID: Humbolt Mill 60305471

QC Batch: T044757
QC Batch Method: SM 4500-O C-01
Analysis Description: Dissolved Oxygen
Analysis Method: SM 4500-O C-01

Trace Project ID: T14D430
Client Project ID: Humbolt Mill 60305471

QC Batch: T044749
QC Batch Method: SM 4500-P E
Analysis Description: Total Phosphorus
Analysis Method: SM 4500-P E

METHOD BLANK: T044749-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Phosphorus-Total (as P)	mg/L	<0.010	0.010	

LABORATORY CONTROL SAMPLE: T044749-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Phosphorus-Total (as P)	mg/L	0.100	0.0991	99	85-116	

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CHAIN-OF-CUSTODY RECORD

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Page 1 of 1

TRACE ID NO. T14D430

TRACE USE ONLY

Logged By: JW Checked By: JW

Received on ice: (Yes) No Preservative Checked: (Yes) No N/A

Soil Volatiles Preserved: MeOH Low Level Lab Sampling Time:

Report Results To:

Client Name: AECOM

Contact Person: LANCE LINDBERG

Mailing Address: 1050 WILSON ST

City, State, Zip Code: MARQUETTE, MI 49855

Phone: 906-226-4980 Fax: 906-226-8321

Email Address: lance.lindberg@aecom.com

Cell #: 906-869-0619 Sampled by: JH

Project Name & #: HUMBOLDT MILL 60305431

Bill To:

Billing Address (if different) _____

City, State, Zip Code _____

Attn: _____ Phone: _____ PO #: _____

Regulatory Requirements		Turnaround Requirements		Matrix Key	
MERA TMDL's	☐	Standard	☑	S = Soil	WI = Wipes
Drinking Water	☐	3-4 Day (RUSH)*	☐	W = Water	LW = Liquid Waste
NPDES	☐	24-48 Hour (RUSH)*	☐	SE = Sediment	A = Air
USACE	☐	* Requires prior approval		OI = Oil	D = Drinking Water
Special	☐			SO = Solid Waste	SL = Sludge

Request for Analytical Services

ANALYSIS REQUESTED

TRACE NO.	DATE TAKEN	TIME TAKEN	METALS FIELD FILTERED	CLIENT SAMPLE ID	MATRIX	NUMBER OF CONTAINERS	Composite, As, Ba, Be, Cd, Co, Cr, Cu, Fe, Mn, Ni, Se, Ag, Tl, Sn, Zn, Mo, V, Hg	Total Cyanide	Total Sulfide	TDS	Diss. Phenolics	TSS	Ammonia, Nitrogen as N	Do/a H	REMARKS	Possible Health Hazard
1	4/28/14	11:45	N	EM-HMP-009	W	6	X	X	X	X	X	X	X	X	X	SAME AS PREVIOUS ANALYSIS CALL, IF QUESTIONS	

Please Sign

Item #	RELEASED BY	RECEIVED BY	DATE	TIME	Item #	RELEASED BY	RECEIVED BY	DATE	TIME
	1)	UPS	4/29/14	5:00PM		3)			
	2) UPS		4/29/14	8:55		4)			

In executing this Chain of Custody, the client acknowledges acceptance of the terms and conditions of the agreement as set forth at http://www.trace-labs.com/cocterms.php

TRACE — the science of compliance

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SAMPLE LOG IN CHECKLIST

Trace ID #: T14D430 Date: 4/29/14 Package Description: Cooler

Client Name: AECOM Time: 8:55 Logged in by: SW

Cooler Receipt

Cooler/samples delivered by:
- Trace courier ☐
- Hand delivered ☐ Name of delivery person: _____
- Commercial courier ☒ UPS ☒ FED EX ☐ US Mail ☐

Tracking Number: ☐ Not Applicable
Tracking #: 1Z RA1034019276 8558

COC Seals present and intact on cooler? No ☐ Yes ☐ ☒ Not Applicable

Custody seals signed by Client? No ☐ Yes ☐ Client custody seal # (if applicable): _____

Coolant and Temperature

Type of Coolant Used

- Slurry w/ crushed, cubed, or chip ice? ☒
- Multiple bags of ice around samples? ☐
- Ice Packs/ Blue Ice : ☐
- No Coolant Present: ☐

Cooler Temperature

Correction Factor: IR Thermometer 0.2 °C

Digital Stick Thermometer -0.1 °C

Temperature Blank: NA °C (Use Digital Stick Thermometer)

Range of 3 samples: 1.4-2.5 °C (Use IR Thermometer)

Melt Water: Ø °C (IR or Stick Therm. - circle one)

Ice still present upon receipt: ☒ Yes ☐ No

General

	Yes	No	NA	Comments
All bottles arrived unbroken with labels in good condition?	☒	☐	☐	
Each sample point is in a sealed plastic bag?	☐	☒	☐	
Labels filled out completely?	☒	☐	☐	
All bottle labels agree with Chain of Custody (COC)?	☒	☐	☐	
Sufficient sample to run tests requested?	☒	☐	☐	
pH checked and samples at correct pH?	☒	☐	☐	See Below*
Correct preservative added to samples?	☐	☐	☒	
Air bubbles absent from VOAs?	☐	☐	☒	
COC filled out properly and signed by client?	☒	☐	☐	
COC signed in by TRACE sample custodian?	☒	☐	☐	
Was project manager called and samples discussed?	☐	☐	☐	

Notes:

*EMD pH Test Strips Used:

☒ pH 0-2.5 Lot: I HC390427 ☒ pH 11.0-13.0 Lot: HC949254

☐ Other: _____

Form 70-A.10
Effective 8/26/13

TRACE Analytical Laboratories, Inc.

CERTIFICATE OF ANALYSIS